

Dr. Fletcher Answers Final Shuttle Question

New Shuttle Work Let, Bids Asked

ROUNDUP

NASA MANNED SPACECRAFT CENTER

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Boost Stage To Be Solid Propellant

The Space Shuttle booster stage will be powered by solid rocket motors in a parallel burn configuration. The booster stage will be recoverable. Requests for proposals for design and development of the space shuttle are expected to be issued to industry immediately.



This model of Space Shuttle is similar to the version just decided on. Two solid propellant rockets will flank the external liquid hydrogen tank used by the delta-wing orbiter stage. Boost phase will utilize both solids plus the orbiter's main engines.

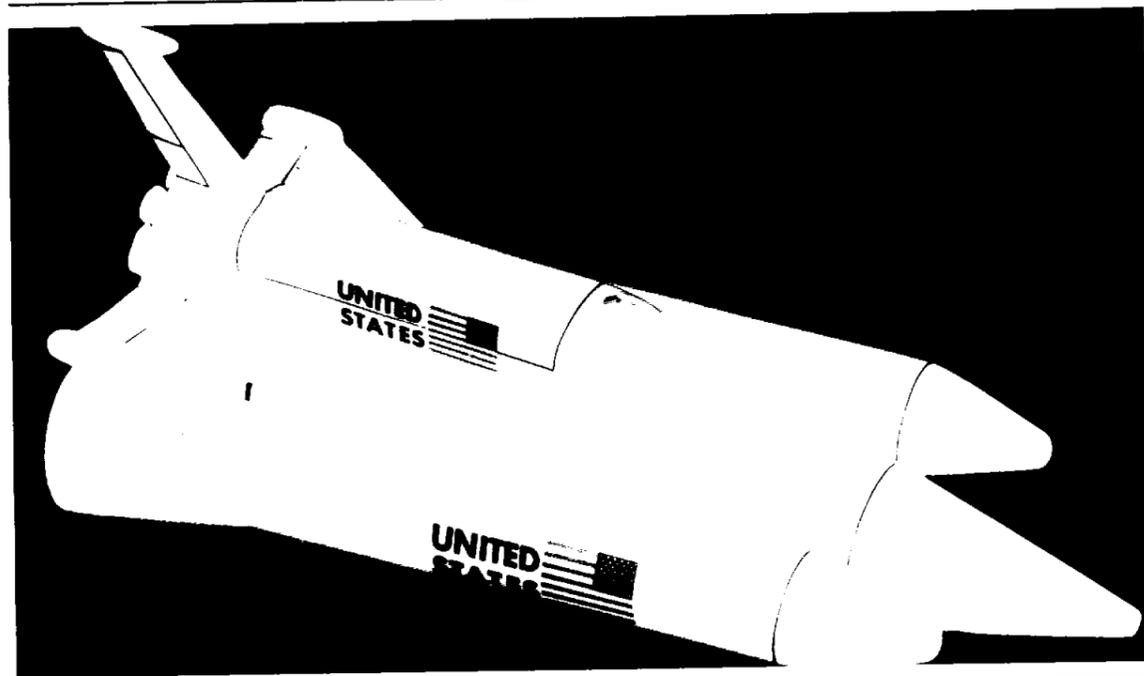
The booster decision settles the principal question left open for further study at the time the decision to proceed with the development of the Space Shuttle was announced by President Nixon in January.

In announcing this decision, Administrator James C. Fletcher stated that it means that the space shuttle will cost less to develop than forecast in January. Development cost is now estimated at \$5.15 billion compared to the earlier estimate of \$5.5 billion.

While this reduction is accompanied by some increases in the estimated cost per mission, the estimate of \$10.5 million for the configuration selected is well within the acceptable range for economical use of the Space Shuttle system, Dr. Fletcher said.

NASA's booster studies since January have shown that both solid and liquid propelled configurations would have been feasible from a technical point of view.

(Continued On Page 4)



Gilbreath New Operations Deputy, Jones Moves to White Sands Facility

Kenneth B. Gilbreath, manager of the White Sands Test Facility, has been appointed deputy director of Center Operations at MSC.

Jesse C. Jones, chief of Laboratory Operations for MSC's Engineering and Development Directorate, has been named to succeed Gilbreath as manager of the White Sands facility.

Gilbreath, 42, will be deputy to Center Operations Director Joseph V. Piland. Manager of the NASA operations at White Sands since 1969, Gilbreath has been with NASA for eight years.

Before joining NASA he was employed by Westinghouse Corporation and Martin Marietta Corporation.

He graduated from New Mexico State University with a bachelor of science degree in electrical engineering in 1956.

A native of Portales, N.M., and a veteran of the Navy, Gilbreath is married to the former Doris J. Funk of Deming, N.M. They have three children—Trudi is 15, Judith 10, and Brad 8.

Jones, 43, was born in Perryton, Texas. He holds a master's degree in mechanical engineering from the University of Houston.

Prior to joining NASA in May 1962, Jones was employed by Douglas Aircraft Company, Bechtel Corporation, and was on the civil engineering faculty at Texas Tech.

Annual Egg Hunt Scheduled April 1

The annual Easter Egg Hunt is scheduled for Saturday, April 1, at 1 o'clock with prizes scheduled for the finder of the most eggs and the lucky locator of the golden egg.

The hunt is open to kids from 2 to 8 years old, and Employees Activities Association representatives have the tickets—they're 50 cents.

Easter egg baskets will be furnished, so participants should not bring their own. Goodies from the Easter Bunny will be distributed after the hunt or, if it rains, the candy and eggs will be distributed between 1 and 2 o'clock from Cafeteria No. 1.

A \$75,000 contract to design and build a heating unit to produce high temperatures for testing Space Shuttle materials has been awarded to McDonnell Douglas Corporation.

The unit, called a Heating Array, is to be about three feet by three feet and capable of generating 2500 degrees Fahrenheit and maintaining it for 15 minutes.

The unit also must operate in a vacuum chamber at atmospheres equivalent to sea level to 200,000 feet.

* * *

A proposal to study and develop concepts for containerized payloads that might be used on the Space Shuttle has been requested of the aerospace industry.

The work will be done for MSC, with about \$95,000 of technology funding earmarked for the study.

Formal title of the request is 'A Sortie Payload Systems Compatibility Criteria Study,' and it deals with pallet-mounted payloads to be flown on 7-to-30-day earth orbital flights.

March 17 is the deadline for submittal of proposals, and the work is to be concluded a year after contract award.

* * *

Six aerospace firms have been invited to submit proposals to study the effect of jet thrusters on a Shuttle Orbiter's aerodynamics at reentry.

Some \$100,000 in technology funds has been set aside for the study, which will be performed at MSC.

Purpose of the work is to find (Continued On Page 3)

Sick Reports from Sixty-Six at MSC

Health Stabilization Watch Begins Over Apollo 16 Crew

A flight Crew Health Stabilization Program designed to protect the Apollo 16 crew from exposure to infectious diseases has gone into effect and posters by space-buff/cartoonist Johnny Hart are blossoming around MSC to remind folks.

Both primary contact and control group members—approximately 350 people in all—have been asked to report illnesses in their family or exposures to disease since February 28.

The reporting procedure is to continue through Apollo 16 splashdown on April 28.

The program has three phases: The first is the assessment of primary contact health and their immunization against preventable diseases.

The second phase entails control

of illness and exposure to communicable disease of those in the primary contact group—those at KSC and the Manned Spacecraft Center—who may be required to be in personal contact with the crew.

The third phase extends from



FLIGHT CREW HEALTH STABILIZATION PROGRAM
PUBLISHED BY HALL SYNDICATE 1971

launch through the end of the mission.

The primary contacts remain under disease surveillance during the post-launch period. Identification of illnesses that might occur among primary contacts during this time will aid in the diagnosis and treatment of flight crews should similar symptoms develop in them during or immediately after the mission.

According to Dr. B. C. Wooley, MSC's manager of the Health Stabilization Program Task Team, "The key factors in reducing the probability of the flight crew being exposed to an infectious disease agent are minimizing the number of people that have contact with the crew from F minus 21 days to launch and maximizing the probability that those who do

contact the crew are healthy."

Gary McCollum, MSC's manager of the Medical Surveillance Office at KSC, said the primary contact group consists of 175 people—109 at KSC and 66 at MSC.

McCollum said the control group includes approximately the



FLIGHT CREW HEALTH STABILIZATION PROGRAM
PUBLISHED BY HALL SYNDICATE 1971

same number as the primary contact group. Unlike the primary contacts, control group members are not immunized, nor do they receive a physical examination.

This gives the Medical Surveillance Office, manned by Dr. H. J. Schneider, Richard C. Graves, and McCollum, the opportunity to compare the health of the two groups.

"To my knowledge," said Dr. Hal Eitzen of the University of Texas School of Public Health, which is under contract to NASA, "this is one of a very few significant studies which has been mounted to study the incidence, transmission, and control of infectious diseases in a selected normal population.

(Continued On Page 2)

NEBA Offers Insurance Coverage at Low Rates

This is the second of three articles on the insurance program of the NASA Employees Benefit Association.

NEBA offers life insurance, with double indemnity for accidental death, for a quarterly payment of \$1.30 per thousand—just ten cents a week per thousand dollar coverage. This amount is the same for all eligible employees regardless of age. The insurance schedule is:

Description of Class Employees Whose Base Annual Earnings are:	Life Insurance Face Amount	With Accidental Death Benefit	Employees' Quarterly Payment
1 Less than \$7,000	\$ 8,000	\$16,000	\$10.40
2 \$ 7,000 but less than \$ 8,000	\$10,000	\$20,000	\$13.00
3 \$ 8,000 but less than \$10,000	\$12,000	\$24,000	\$15.60
4 \$10,000 but less than \$12,000	\$14,000	\$28,000	\$18.20
5 \$12,000 but less than \$14,000	\$16,000	\$32,000	\$20.80
6 \$14,000 but less than \$16,000	\$18,000	\$36,000	\$23.40
7 \$16,000 but less than \$18,000	\$20,000	\$40,000	\$26.00
8 \$18,000 but less than \$20,000	\$23,000	\$46,000	\$29.90
9 \$20,000 but less than \$22,000	\$25,000	\$50,000	\$32.50
10 \$22,000 but less than \$25,000	\$27,000	\$54,000	\$35.10
11 \$25,000 but less than \$30,000	\$30,000	\$60,000	\$39.00
12 \$30,000 and over	\$35,000	\$70,000	\$45.50

Participants also may obtain insurance coverage on their spouses and children, if they so desire.

The quarterly premium payment is the same amount, regardless of the number of children covered or the age of the spouse.

GUARANTEED

In addition, this policy has a guaranteed insurability option: as long as you remain insured with respect to your dependents, the option assures the availability of \$5000 of cash value life insurance to each dependent child when he reaches age 19, regardless of his health, occupation or military status at that time.

Even in the case where there are no children and only the spouse is covered, the cost is about \$1 per thousand per quarter.

AVAILABILITY

Family coverage falls into two classes—Class A in which the employee's annual earnings are less than \$12,000, and Class B with earnings \$12,000 and over.

In the former, the spouse is covered for \$2500 and the children \$1000 at a quarterly payment of \$2.65. In the latter it is \$5000 and \$1000 for \$4.65 per quarter.

The insurance is available to all NASA employees occupying full-time positions and serving under other a temporary limited appointment, within 90 days of the date of employment, without question.

STILL FAIRLY EASY

However, for those employees who did not obtain this insurance during their first 90 days of employment, it still is relatively easy for most to get the coverage now.



Adoptable Child Council Picks MSC Man Acting Chief

An MSC man, Bruce Williamson of Math Physics Branch of MPAD, has been named acting president of the Council on Adoptable Children.

COAC made up of individuals concerned with children who need homes but are considered hard to place because they are older children, handicapped children, in sibling groups or minority or biracial children.

The Council is not an adoption agency, Williamson points out, but does work closely with several agencies in such areas as recruitment, pre-screening, and post-placement guidance.

The next COAC meeting will be April 14 at the World Trade Building, with guest speaker to be John Grace, director of Catholic Charities.

Mariner 9, Pioneer 10 Continue to Work OK

As one American spacecraft takes a breather from a challenging photography assignment, another plugs along in its journey to a distant planet.

Mariner 9 has completed its primary objective of photographing Mars from the south pole to the northern hood.

Nearly 7,000 pictures have been sent back to Earth. Some of the views are of Mars' two moons, Phobos and Deimos.

During the rest of March, Mariner 9 will take only about 42 pictures a day every two days.

From the Mars photos already received, scientists at JPL are assembling a map of much of the planet's surface.

Meanwhile, elsewhere in space, Pioneer 10 is heading smoothly toward Jupiter. The two have a

brief rendezvous this coming December 3.

The first really big hazard the 570-pound spacecraft must face will be the Asteroid Belt, that collection of cosmic rubble orbiting the Sun between Mars and Jupiter.

Pioneer 10 should be at that point sometime in July.

Round-trip radio communication with the spacecraft from Earth already takes more than a half a minute. By December, the signal will take an hour and a half there and back.

After it takes a look at Jupiter from about 87,000 miles out, Pioneer 10 will continue on out of the solar system and into interstellar space.

Health—

(Continued From Page 1)

Flight crew illnesses intruded upon flight schedules during several early Apollo missions and the successful health stabilization program was instituted as a preventive measure.



Burke Baker Presents 'Grand Tour' Over Three Billion Miles of Space

NASA will not make the 'Grand Tour' but Burke Baker planetarium will.

The three-billion-mile sweep through space, with visits to the edges of five major planets, features the planetarium's new show at the Houston Museum of Natural Science through May 28.

The Grand Tour is based on a rare alignment of the outer planets that will occur in the late '70s and not again for 176 years.

NASA was planning to take advantage of the universal gravity created by the lineup to pull an unmanned spacecraft from one planet to the next, but the idea has been scrapped for lack of funding.

The Burke Baker tour will be presented Wednesdays, Fridays and on weekends. Calls for information and reservations should be made to 526-4273.

They must complete a health questionnaire, showing evidence of insurability satisfactory to the Home Life Insurance Company.

In doubtful cases, the company may request further medical information from the applicant's personal physician or, in rare cases, ask that the applicant have a physical examination.

TIME IS NOW

The time to apply for dependents' life insurance is while they still are in good health.

NEBA is conducting an enrollment drive during March so that employees not covered by the program can enroll.

Softball Players Call First Session

Softball season is almost here, and team managers or their representatives should be ready to organize on Monday, April 3.

Men's fast- and slow-pitch leagues will be set up in a 5 p.m. meeting in Room 720 of Building 2, with play scheduled to start Monday, May 1.

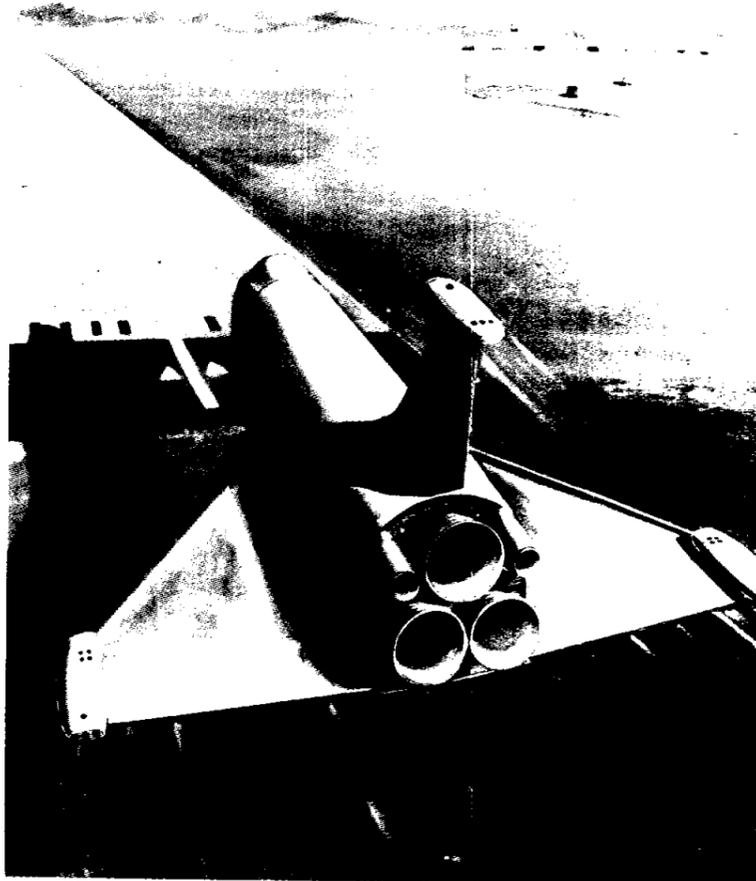
The leagues are open to NASA and Ellington civil servants and military personnel, MSC-associated contractor employees, and their dependents.

Dr. Owen to Talk To Accountants

Principal speaker at next Tuesday's meeting of the Federal Government Accountants Association will be Dr. Cannon A. Owen of the Cardiopulmonary Laboratory here.

His topic will be a program to keep the heart and pulmonary system toned to help prevent lethal diseases.

The meeting will be held at the Nassau Bay Motor Inn and will begin at 5:45 with a social hour. Reservations should be made before noon Monday through Ray Kaufmann, extension 5867.



SHUTTLE LANDS—This artist's rendering shows the Space Shuttle orbiter stage coming in for an airplane-like landing after a trip through space. The program took another step toward reality this week with the announcement of a decision on the boost stage. Also during the week, a contract was let for a unit to test Shuttle materials at high temperature—the orbiter is expected to face 2500-degree heat when it reenters the atmosphere—and proposals were asked to study the effect of the jet thrusters, shown here in wingtip pods, on the craft's aerodynamics at reentry and to develop concepts for containerized payloads to be carried aloft by Shuttle.

Hams Organize, Seek EAA Sanction As Center Club

A group of amateur radio operators at MSC has named an interim slate of officers and is seeking Employees Activities Association sanction as an organized club.

That sanction and a facility for meetings and an operating station are the first items of business, according to Otho Lindsey, newly-elected club president.

Other interim officers are Lee Ruetz first vice president, Don Wiseman second vice president, and Jack Alexander secretary-treasurer.

Ruetz also was named membership chairman, Chuck Biggs facilities chairman.

A luncheon meeting is scheduled for the MSC cafeteria next Thursday from 11:30 to 12:30. Interested persons are invited to attend.

Charter membership applications from MSC and contractor employees and their dependents—licensed radio operators or not—are being accepted by Lindsey and Ruetz.

Roundup Swap-Shop

(Deadline for Swap-Shop classified ads is Thursday of the week preceding Roundup publication date. Ads are limited to MSC civil service employees and assigned military personnel. Maximum length is 20 words, including name, office code and home telephone number. Send ads, typed or legibly written, to Roundup Editor, AP3)

VEHICLES

68 Peugeot Station Wagon, air, auto trans, radio, radial tires. \$900. Anderson, 485-3025.
 71 BMW R60/5, xint cndn, 4000 mi, \$1250. Meeker, 482-2514.
 Dune buggy, 67 VW chassis & engine, automatic, metalflake orange, white top, sand tires, maqs. roll bar, xint, \$1200. Mandell, 877-2925.
 67 Cougar GT XR-7, 390 CID engine, 4 spd, sterec, air, power disc brakes, power steering, radial tires, vry gd cndn, \$1500. Mandell, 877-2925.
 64 Cadillac Sedan Deville, all extras good, 2nd transportation, \$400. Capps, 488-5306 after 6 p.m.
 71 1/2 Suzuki Duster, fantastis trail bike, low mi, prfct cndn, extras, carefully maintained, over \$550 invested, first \$439 steals it. Horton, 877-4102.
 71 Capri, in warranty, gold, black interior, deluxe decor grp, fctry air, radio, heater, radial tires, disc brakes, reclining buckets. Bower, 488-1444 after 4:30
 69 Ponton 125 MX, mech exInt, race-ready, bike & trailer, \$450. Anderson, 932-5236.
 59 Chevy, good work car, air, radio, auto trans, motor, power steering in good cndn, xint tires, \$150. Janney, 488-0658.
 67 Pontiac 4-dr sedan, Catalina w/deluxe interior (Ventura), 63,000 mi, one owner, xint cndn, air, power, Allen, 946-5440.
 67 Chevelle Malibu V8, air, auto, power, vinyl top, chrome rims, extra clean, \$1095. Spross, 946-1609.
 71 Honda CL 100, \$425. Ashley, 932-3411.
 63 Ford TB, green interior, white ext, xint cndn, 62,090 mi O'Loughlin, 877-1189 after 5:30 p.m.
 67 Honda S65, just overhauled, \$135. 966-2178 after 5 p.m.
 68 Galaxie 500 2-dr hardtop, air, power steering, disc brakes, AM radio, \$1500. Sylvester, 941-4733.

57 Chevy 2-dr hardtop, automatic, V8, runs good, fair cndn. Alley, 485-4150.
 Garden tractor wi 5 attachments, as is, \$50. Camper cover, lined, to fit LWB truck, \$150. Cooper, 482-1009.
 68 Harley Davidson 125cc motorcycle, good cndn, no title, \$150. Cooper, 482-1009.
 Climatic Air auto a/c unit complete, \$50. Holt, 471-0189.
 69 Plymouth Fury III, a/c, power steering & brakes, xint cndn. Sjoberg, 877-4309.
 70 1/2 Honda CL 450, 7000 mi, xln cndn, red, \$750. Ardoin, 877-4960.
 70 Honda 175, xInt cndn, low milaenge, \$75. Alcorns, 877-1453.
 Suzuki TC-90cc trail bike, new cndn, 8 speed gears, 11 hp, top speed 65, new \$425, 18-inch knobbies, \$285. Hamlin, 932-3992.
 68 VW fastback, xInt cndn, 26,000 mi, \$950. Owen, 877-2030.
 66 Pontiac Bonneville, loaded, 62,000 mi, \$750. Owen, 877-2030.
 65 Dodge 1/2 ton pickup, 6 cyl, A-1 cndn. Nimr, 771-0815.
 68 Volvo 4-dr, automatic, new brakes, FM/AM, radial tires, xInt cndn. Nimr, 771-0815.
 66 VW radio, good tires, clean, \$575. Perkins, 935-3674.
 Minibike, 5 hp Stellar, brake and head-lights, drum brakes, licenseable, less than 20 hrs running time, xInt cndn. Moser, 877-3048.
 64 VW camper w/radio, recently tuned, good transportation, \$500. Pagan, 481-0408.
 65 Pontiac LeMans 2-dr hdt, air, bucket seats, 4-spd, flr shift w/console, good tires., Coan, 488-1028.
 69 Olds Cutlass cnv, air, automatic, AM/FM radio, good cndn. Coan, 488-1028.
 67 VW Camppobile, good cndn, below Blue Book. Harvey, Alta Loma 925-2138.
 68 Mustang cnv, A-1, full power, tilt

wheel, automatic, air, bargain. Vetter, 488-0275.
 71 Honda mini-trail, 3-spd, just like new, save one-third. Vetter, 488-0275.
 67 Mercury Caliente 8-cyl 4-dr, air, auto, radio, xInt cndn, power steering, cheap. Brewer, 422-7304.
 71 Chevrolet Camaro, bucket seats, a/c, power steering, rally wheel covers, wide oval tires, xInt cndn, \$2950. Remington, 331-3719.
 4 wheel rims and hub caps for standard size Dodge, singly, pairs or set. Rainey, 488-4384.
 38 Ford pickup, 100% stock, 50% re-stored. Biggs, 487-2978.
 70 Buick Electra Custom, loaded, xInt cndn, in warranty. Dietz, 534-3665.
 68 Pontiac Firebird, creampuff, new tires, 45,000 mi, \$250 and assume balance. Leissner, 877-4137.
 65 Chevrolet Corvair, sound mech and interior, few dents in body, \$250. Leissner, 877-4137.
 New 9 1/2' pop-up Kamp Kraft fiberglass camper on 65 1/2-ton Chev truck, factory air, sacrifice, \$2000. Cooper, 482-1009.
 64 Olds Cutlass 2-dr hdt, 300 hp V-8, air, floor shift, buckets, tach, wire wheels, radio, low mi, xInt cndn, one owner, \$750. 333-2509.
 67 Buick Spcl 2-dr, auto, powersteering, air, vinyl top, all vinyl interior, good cndn, \$850. White, 488-3409.
 65 Pontiac LeMans 2-dr, bucket seats, automatic, tape deck and speakers, \$340. Shone, 488-0157.
 63 Cadillac 4-dr hdt Fleetwood, best one, full power, AM/FM, air, new tires, xInt cndn, \$800. 944-7632 after 5.
 64 Fairlane 4-dr 260 V-8, radio, heater, air, stick, xtra clean, \$585. Brown, 772-9802.
 66 Ford sta wgn 8-pass, a/t, power steering/brakes, air, 390 V-8, new tires, bargain,

\$825. Humbert, 944-8753.
 70 Chrysler Newport, fully loaded, Reese trailer hitch, good cndn, \$2300. Matthews, 333-3485.
 62 Dodge Dart V-8, automatic, a/c, power steering/brakes, 70,000 mi, \$275. Paulk, 665-8689.
MISCELLANEOUS
 Skis, brand new, still in packing, Fisher 205 Superglas, \$150. Cozens, 664-6438.
 Sonar D-10 (0-60 ft) depth finder, in carton, \$100. White, 932-4472.
 15-hp Michigan Marine Sr. Twin inboard engine, \$100. White, 932-4472.
 Microscope, Sears 600-pwr 3-turret, prepared slides, dissecting kit, manual and case, \$5. 16 antique glass insulators, \$5. Tremant, 333-3885.
 100-lb drum granular calcium hypochlorite, \$38. Hake, 932-4693.
 18-in long human hair wig fall, dark brown, xInt cndn, \$20. Hajdik, 488-5162.
 Moving cartons, wardrobes, dishpaks, bookboxes, lampshade cartons, mirror covers, packing paper, airline dog kennel, sell or swap. Hawk, 488-4409.
 One H78 x 15 belted tire, full tread depth, \$20. Mullaaley, 948-9251.
 Maternity dresses, xInt cndn, stylish, size 11. Infant toys, Playtex bottles, car bottle warmer, food holder, diaper caddy, sterilizer, diaper bag, Cubley, 488-2248.
 Gasoline powered generator, 1.5 KW, 115 VAC, 60 cycle, xInt cndn, \$100. Lindsey, 488-0517.
 Ram irons and woods, irons 2-9, woods 1, 3 and 4, aluminum shafts, \$75. Tinkler, 488-5725.
 Used patio glass sliding door 6' x 6' frame, screen 3' x 6', \$25. Paton, 644-0315.
 Tape deck, Sony TC-560D w/auto reverse, plays/records both directions, \$180. Bailey, 944-1710.
 Dehumidifier, Whirlpool hi-capacity, 28 pint per day water removal, \$80. Bailey, 944-1710.
 Bowling shoes, ladies size 8, Brunswick, like new. Klotz, 488-1514.
 Diamond dinner ring, 33 full-cut diamonds, 3.6 carats, best offer. Suler, 941-1929.
 Sperry Snap 6 clamp ammeter, ohm meter, like new, \$40. Set 6 A/C service gauges, hoses, \$20. Rosenbaum, 474-4386.
 Stereo phono/AM-FM radio in attractive cocktail table, compact, beautiful tone: Simon, 488-4043.
 Fur coat, sheared raccoon looks like sheared beaver, xInt cndn, make offer. Simon, 488-4043.
 Criterion 4 1/2" reflector telescope, equatorial mount, 3 eyepieces, slow motion controls. Simon, 488-4043.
HOUSEHOLD ARTICLES
 Kenmore zig-zag sewing machine Model 90 in fruitwood 4-drawer cabinet, \$125. Keyser, 946-4059.
 Jacuzzi whirlpool bath, best offer. Kindness Clairol electric hair curler. Other items. Lai, 483-6461.
 Sacrifice antique 4-poster dbl bed w/xtra firm mattress and box springs, \$100 below investment. Fitzgerald, 482-7143.
 Franciscan pottery Starburst pattern, 12-plc setting and many xtra pieces, \$60. Cooper, 944-9026.
 Early American hutch & table w/4 chairs, xInt cndn, \$200. Corey, 932-2901 after 5.
 Large dining table and six chairs, beautifully refinished, \$50. Teasdale, 482-7801.
 Brown vinyl swivel rocker, green vinyl upholstered club chair, cushion. Klotz, 488-1514.
 Easy spin-dry washer, used very little, A-1, great water saver, \$75. Vetter, 488-0275.
 Sewing machine, Kenmore zigzag portable w/case, xInt cndn. Coan, 488-1028.
 Full-size 6-inch foam latex mattress, box springs, steel bed frame, vinyl mattress cover, like new, \$100. Moore, 488-4089.
PROPERTY & RENTALS
 Wooded canal lot in Oak Harbor, boat access to Clear Lake, reasonable priced. Workman, 534-3446 after 5 weekdays.
 Beautiful lot Lake Conroe area, 50' x 125' Arrowhead Lakes, Willis, Tex. Swim pool, rec center, lake, \$2500. Sprake, 482-2312.
 Lot on Lake Livingston, Pt. Lookout, 75 x 137, water, power, restricted, \$3500. Richardson, 946-7587.
 Demi John Island, bulkheaded lot on deep navigation cut, Bastrop Bayou, unpolluted, fishing, skiing right to you door. Klotz, 488-1514.
 Wedgewood Village (Friendswood) 3-2-2, huge pecan tree shades entire front lawn, 1500 sq ft, no formal areas, built-ins, central air/heat, \$3500 equity, \$21,000 balance, 7 1/4% GI. LaMere, 482-2953.
 2 1/2 acres in woods NW of Dickinson, undeveloped, \$6000/acre, terms. Hartung, 877-1294.
CAMERAS
 Telephoto lens, Pentax Auto-Takumar 135-mm f3-5, \$60. Slide projector w/new projection lamp and 27 slide trays, \$25. Jones, 488-3976.
WANTED
 Back pack or knapsack. Thomson, 488-0874.
 Hide-a-bed, good cndn. Green, 331-3001.
BOATS
 Lido 14 sailboats, info on prices, cndn

Deke Gets 'Go' For Flight Status, Heart Beats Okay

Deke Slayton got some good news and some bad news this week.

The good news: He can fly again, even in space.

The bad news: There are no space flights he can make.



But Deke, as director of Flight Crew Operations, knows better than most MSC personnel just what the space flight picture is. Right now he only has a hope that a mission beyond the two remaining Apollos and three scheduled Skylabs will be approved.

"I'm available," he says, responding to speculation that something might open up flight-wise.

Slayton, once programmed to be the second American to orbit the earth, was washed out of spaceflight-readiness by an irregular heartbeat.

Dr. Charles Berry disclosed from Washington Monday that the hasty heart had showed no abnormal beats for the past two years and that Slayton would be returned to flight status.

New—

(Continued From Page 1)

the best configuration for the reaction control system for the Orbiter stage.

Proposals are due April 3, with the study to be completed nine months after award of the firm-fixed-price type of contract.

Engineering Analysis Division of E&D will direct the study.

used Lidos for sale by owners. Hoover, 877-3366.

21' Southcrest sailboat w/working sails and 5 hp obm, \$2000. Hill, 932-5269.

15' 3" Demon class fiberglass centerboard sailboat, large roomy cockpit seats 5 or more, sails, trailer, \$750. Ward, 333-2182.

Gulf Coast 14' sailboat w/trailer, xInt cndn, \$375. John Piland, Dickinson 534-5915.

71 Hydrodyne tournament skier w/trailer, cover, 165 hp, ski accessories, best ski rig made, \$3000. Osburn, 877-3012.

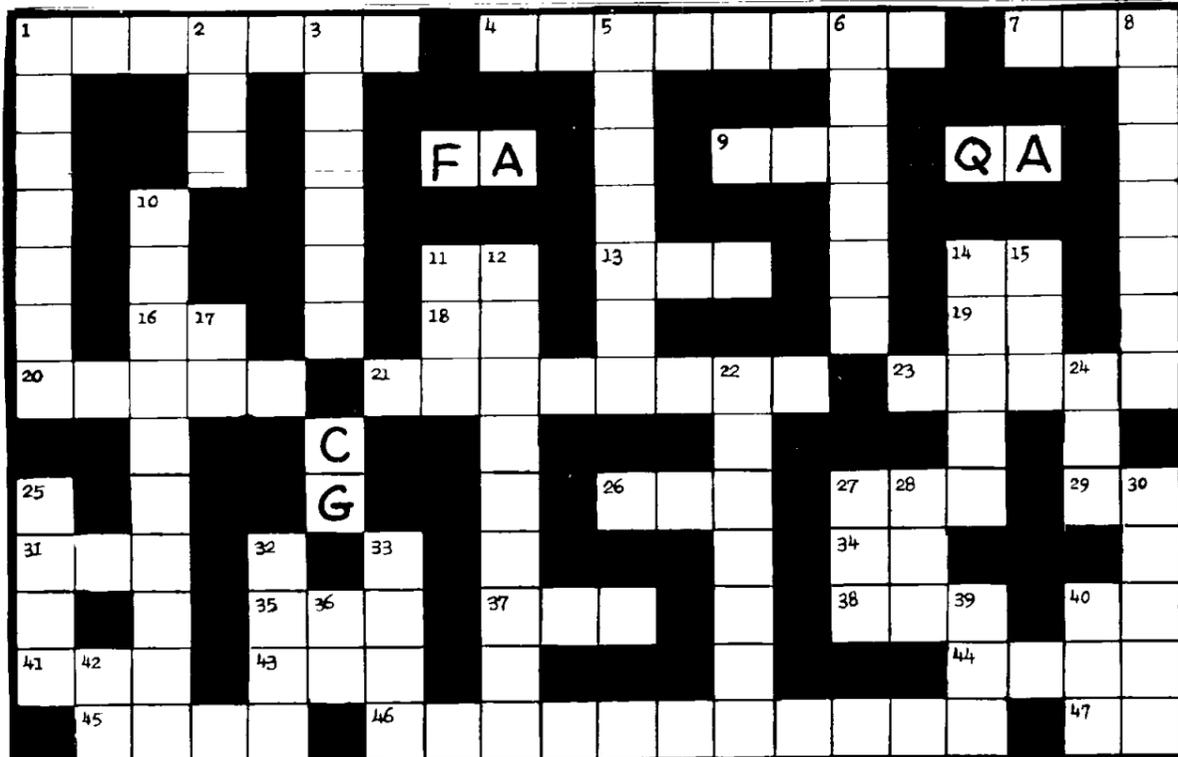
26' Chris Craft cabin cruiser, sleeps four, full galley, V-8 engine, \$3100. Smith, 585-4957.

16' Lone Star (Chrysler) sailboat, galv trailer, many xtras, good cndn, reasonable. Simon, 488-4043 for demonstration sail.

MUSICAL INSTRUMENTS

Conn cornet, xInt cndn, case, mute, xtra mouthpiece, music stand, Redding, 946-1426.

Drum set, W.F. Ludwig, cymbals, tomtoms, snare and base drum, enamel finish, good cndn, \$200. DeAtkine, 488-3866.



This is a first for the Roundup (at least, we think it is), an original crossword puzzle. The author is Charles Glancy of the Apollo Spacecraft Program Office, so if you have any quarrel with his format or his definitions, don't call the Roundup. You get a head start with six squares already filled in: FA is for Flight Awareness, QA for Quality Assurance—both important to the space program—and CG is Mr. Glancy. When you're ready to glance at Glancy's answer, it's on page 4.

- ACROSS**
- Space program
 - Purchase—
 - Awkward person
 - Help call
 - High Civil Service rating
 - Charged particle
 - Apollo 12 LMP monogram

- Swedish inventor's initials
 - Gold (chem)
 - All of us
 - Mother-of-pearl
 - Gajo
 - Wash or immerse
 - Hawaiian landing gift
 - Signal
 - American inventor's initials
 - TGIF spa
 - Spacecraft module
 - A brawl
 - Period
 - Mountains (abr)
 - Silver (chem)
 - Unwanted Civil Service process
 - Contains metal
 - Become tasteless
 - On top of
 - We seek it in NASA
 - Tellurium (chem)
- DOWN**
- Spacecraft flight
 - Design control group initials
 - Military meal
 - Required characteristic at MSC
 - Checkout equipment
 - We work to prevent this
 - Modules
 - Public Affairs Office
 - Of tides by the moon
 - Cognizant
 - Wager
 - Module contractor
 - Guide
 - High Temperature
 - Abbreviated abbreviation
 - Two spacecraft modules
 - Universal Military Training
 - Lunar module call sign
 - Farm produce
 - Debtor
 - Fortran logic statement
 - Snooper
 - Altitude (abr)
 - State (abr)

NASA Facts: Food for Space

Skylab Home-cooked Meals Result of Research

Answering the public's questions about space is done partly through brief, informative pamphlets titled "NASA Facts." Because they contain information of interest to MSC personnel who may not be as familiar as they would like to be with activities other than their daily jobs, some of these documents will appear in the Roundup from time to time. This first one—to be carried in two parts—is "Food for Space."

* * *

The aluminum squeeze tubes were done away with because the bulk of their weight came from the container rather than the contents (weight control is one of the most critical items of spacecraft design).

The bite-size cubes of fruit, meat, bread, or desert foods were coated with an edible gelatin to control the crumbling experienced in Mercury.

Rehydratables in improved plastic packs added variety to menus strictly regulated to give an astronaut 2800 calories a day as 16 to 17 percent protein, 30 to 32 percent fat, and 50 to 54 percent carbohydrate.

The meals were nicely packaged. The cubes were vacuum sealed in clear plastic. The rehydratables came in laminated plastic bags with a one-way valve at

one end and a tube at the other—the procedure was to insert the nozzle of a gun-type dispenser into the bag and add a squirt or two to the dry contents, then knead the mixture to a puree that could be squeezed through the tube into the astronaut's mouth.

The items in each meal were chosen before the flight by each astronaut in the crew.

The meals were packaged sep-



PROOF OF THE PUDDING — One of the most important tests facing food for space is the sampling by the men who will eat it. These Skylab meals, for instance, are being checked out by astronauts and program officials who not only taste the food but try out the compartmentalized Skylab food trays in which the meals are heated.

MSC Safety Man Wears Two Hats, One of Them for the Air Force Academy

In this season of the Easter bonnet, MSC's Program Management Safety Office chief has blossomed out with two hats.

One of Charles N. Rice's headgear, of course, belongs in the Safety Office in Building 45. The other is that of an Air Force Reserve lieutenant colonel assigned to counsel and guide young people interested in attending the Air Force Academy.

As Col. Rice, he serves as an Academy Liaison Officer. In addition, he also advises students on the merits of Air Force ROTC scholarship programs available at some 176 universities throughout the country.

Springtime traditionally is a busy period for Col. Rice. "Right

now is the time for young men to write their congressmen and the Academy registrar to apply for nomination," he says.

He points out that competition for nomination to the Academy is stiff and that interested students should apply as far in advance as Spring of their junior year in high school.

"Nominations are open to young men from 17 to 22," the colonel adds, "and the successful candidates usually are those with good scholastic records and leadership qualities."

About the AFROTC scholarships open to men and women ready for college, Col. Rice is equally enthusiastic. "The scholarship includes tuition, books, lab fees, and a non-taxable extra \$100 a month.

"Don't underestimate the value of the ROTC program."

When he wears his Air Force hat, Col. Rice can be reached by potential Academy or ROTC scholarship nominees or their parents at his home in Nassau Bay, 18311 Blanchmont Lane. His telephone number is 333-3735.

arately in plastic and aluminum foil laminate that served as a litterbag for leftover food and empty wrappers.

The packs then were labeled as to what meal to be eaten on what day by which crewman, and the packages were put into the spacecraft storage compartment in the order in which they were to be used.

A typical meal would include shrimp cocktail, chicken and vegetables, toast squares, butterscotch pudding, and apple juice. Thanks to a varied menu from which they selected the food, the astronauts faced the repeat of any particular meal only about every fourth day.

From engineering and biological standpoints, these meals were about perfect. Not only did they yield high nutrient and energy values with low residue, they also stood up well under the shocks of launch, weightlessness, the vacuum of space, and the pure oxygen atmosphere of the spacecraft.

But the men who had to eat the food still were unimpressed.

The appearance of most items was not especially appetizing, nor was the method of eating the food natural.

Preparation of rehydratable meals was time-consuming, and the result was a thick lukewarm soup.

Next issue: "The biggest improvement . . ."

Group-rate Flight Connects MSC To Europe Tour

A group-rate fare connecting Houston to the East Coast and Europe-bound flights is being offered by a travel service partly owned by an MSC man.

The special rate—\$132.20 round trip—is in effect for a flight that connects with the NASA Employees Club (Headquarters) charter flight to Europe on May 28.

But Veit Hanssen of Flight Operations' Mission Planning and Analysis Division and part-owner of Hanssen Travel Service, says that though the group leaves Houston together on the 28th, individuals can return at any time within a year.

The Employees Club charter is being handled through B. Maggin, Code RG at NASA Headquarters. Hansen Travel Service can be reached at 334-1548.

Boost—

(Continued From Page 1)

The decision was based on the lower cost and lower technical risks shown in the studies for the solid rocket system.

Industry responses to the requests for proposal for design and development of the Space Shuttle will be received by NASA late in the Spring and selection of contractors is expected in the Summer.

The Space Shuttle will be developed over the next six years. Horizontal test flights are to begin in 1976, and manned orbital test flights in 1978. The complete Shuttle system is to be operational before 1980.

The Space Shuttle will be the first reusable space vehicle. It will be boosted into space through the simultaneous operation of its solid-propellant booster engines and its Orbiter stage high-pressure liquid oxygen-liquid hydrogen main engines.

The booster rockets will detach at an altitude of about 25 miles and descend into the ocean to be recovered and reused. The Orbiter, under its own power, will continue into low Earth orbit.

